epiTRENDS
A Monthly Bulletin on Epidemiology and Public Health Practice in Washington

Vol. 12 No. 2

02.07

Cryptococcus gattii: an Emerging Pathogen in the Pacific Northwest

In 1999, *Cryptococcus gattii* was recognized as an emerging infectious disease in the Pacific Northwest. The original introduction is unknown, but could have been imported trees, crates, or even bird migration. The fungus has spread from Vancouver Island to other regions of Canada and the Pacific Northwest. Vehicles and other movement by people likely contributed to the rapid dissemination. Rare but severe human and animal infections occurred in parallel. It is not yet known if the fungus will colonize our region permanently or cause only transient problems. Considering the diagnosis, obtaining appropriate tests, and promptly reporting cases will improve the understanding of this pathogen.

Initial Recognition of Emergence

Exposure to spores of the soil fungus *Cryptococcus neoformans* can cause severe disease in immunocompromised persons, particularly those infected with HIV. The brain, lung, and skin are the most commonly infected sites. Unlike *C. neoformans, C. gattii* spores can cause infections in persons with normal immune systems. Both severe neurological and pulmonary infections occur.

Until recently, *C. gattii* was considered to be a tropical or semitropical organism occurring only in areas such as Australia. It was not known to be present in temperate climates such as western Canada. The first animal and human *C. gattii* cases in Canada were identified and diagnosed in 2001 on Vancouver Island. When the agent was recognized in the region, other cases were retrospectively documented back to 1999. Infections were found as well in domestic animals such as dogs, cats, and horses. Several porpoises were also discovered to be infected.

Reported symptoms in humans include severe cough and shortness of breath. There may be other symptoms such as chills, night sweats, and loss of appetite. About a fifth of cases have meningitis. Smoking or treatment with steroids may be risk factors for infection. Based on visitors with specific exposure time in the region, the incubation period may be 2 to 11 months.

Continued page 2

Washington State Department of Health

*epi*TRENDS
P.O. Box 47812
Olympia, WA 98504-7812

Further Spread

British Columbia made cryptococcal infection reportable in 2003. By 2005 there were 129 human cases and four deaths, all from Vancouver Island. This represents a high rate of infection compared to areas where *C. gattii* normally occurs. Some cases occurred among residents and visitors without immunocompromised status or existing medical condition. By 2005 three human and six animal cases were reported in the Vancouver Coastal and Fraser Health regions in Canada. None the case patients had exposures on Vancouver Island. One case was fatal. Exposures included yard work, landscaping, and tree cutting.

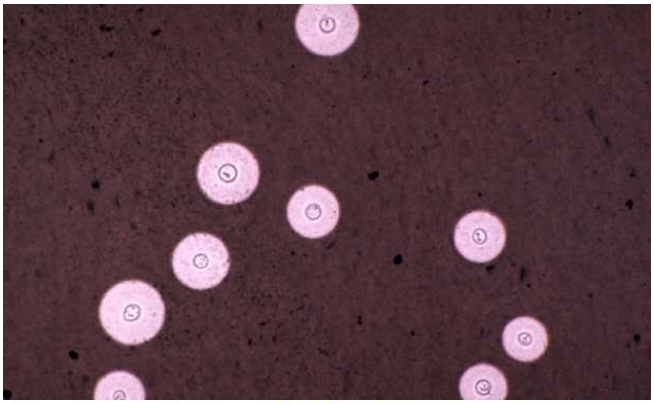
Investigation by a team of public health, academic, and veterinary researchers isolated *C. gattii* from trees, soil, water, and air samples taken from Vancouver Island. Subsequently, *C. gattii* was also isolated from environmental specimens obtained from British Columbia lower mainland.

During 2005 three cats living in Washington near the international border were diagnosed with *C. gattii* by histopathology. Neither animal had potential exposures in Canada. Environmental sampling near the cats' home identified *C. gattii* from soil and tree samples. Two persons in Oregon were reported infected with *C. gattii* although with genetically different strains.

Disease Investigation and Reporting

Human or animal infections with *C. gattii* are reportable in Washington State as rare diseases of public health significance. Cryptococcosis may present as sharp chest pain, unexplained prolonged cough, shortness of breath, fever, severe headache, and weight loss. A patient may present with meningitis or pneumonia. In animals, symptoms vary among species, but may include runny nose, lumps under the skin, and infection of the lungs and nervous system. Since animal disease exceeded human disease in Canada, veterinary reporting is a particularly important part of surveillance.

Diagnosis of *Cryptococcus* sp. is done by commercial labs, but speciation and genotyping of *C. gattii* can be done at the British Columbia Centre for Disease Control Laboratory. Genotyping is needed to determine if the organism is related to the BC outbreak.



Courtesy of www.doctorfungus.org © 2007

Continued page 3

_epi_TRENDS Monthly Posting Alert

To receive monthly e-mail notification of *epi*TRENDS, please register at this website:

http://listserv.wa.gov/archives/epitrends.html

Choose the option to join the listserve. Enter your name and email address.

Typing of the organism is done on a fungal culture. Testing for cryptococcosis can be arranged through the local health jurisdiction. Local health jurisdictions can contact Communicable Disease Epidemiology Section (206 418-5500) for assistance. Treatment for cryptococcal disease is specific antifungal medications. Routine antibiotics for bacterial infections are not effective. Because the fungus is present in the environment, there are no particular precautions that can be taken to avoid cryptococcal disease. Be alert for long lasting or severe symptoms. Seek early diagnosis and treatment.

Further information about *Cryptococcus gattii* is available at: http://www.cryptococcusgattii.ca/

Other references:

MacDougall L, Kidd SE, Galanis E, Mak S, Leslie M, et al. Spread of *Cryptococcus gattii* in British Columbia, Canada, and Detection in the Pacific Northwest, USA. Emerging Infectious Diseases Volume 13, Number 1–January 2007.

S. E. Kidd, F. Hagen, R. L. Tscharke, M. Huynh, K. H. Bartlett, M. Fyfe, L. MacDougall, T. Boekhout, K. J. Kwon-Chung, and W. Meyer. A rare genotype of *Cryptococcus gattii* caused the cryptococcosis outbreak on Vancouver Island (British Columbia, Canada). PNAS, Dec 2004; 101: 17258 - 17263.

MacDougall L, and M. Fyfe. Emergence of *Cryptococcus gattii* in a Novel Environment Provides Clues to Its Incubation Period. J. Clin. Microbiol. May 2006; 44(5) 1851-1852.

Multistate *Salmonella* Tennessee Outbreak

Public health officials in multiple states, with the assistance of the Centers for Disease Control and Prevention, are investigating a large outbreak of *Salmonella* Tennessee infections. As of February 15, 2007, 290 persons with the infection have been reported to CDC from 39 states including four cases in Washington. The outbreak has been prolonged and of low intensity. The first cases occurred August, 2006. Two closely related DNA patterns of *S.* Tennessee isolates have been associated with this outbreak.

Investigation has identified peanut butter as being consumed more often by ill persons than well persons and as statistically linked with illness. Evaluation is ongoing for additional information about the consumption habits of cases, the patterns of distribution of cases, and possible source of contamination.

For more information on this outbreak, refer to the CDC website:
http://www.cdc.gov/ncidod/dbmd/diseaseinfo/salmonellosis_2007/outbreak_notice.htm